

considerable farm land will be inundated, as the water will be backed up almost to Fort Dodge. Engineers declare the dam will generate 4,000 horsepower on a 24-hour basis, and 6,000 on a 12-hour basis, and the power can be distributed easily to Fort Dodge, Webster City, Lehigh, and Boone.

Work has also been started by the Iowa Power Co. on the construction of a series of dams on the Skunk and Iowa Rivers, which, with auxiliary steam plants, will produce 100,000 horsepower for use by the cities in southeastern Iowa. The Oakland Dam, one of the six along the Skunk, is an old one taken over by the new company. It has been rebuilt, new machinery has been installed and it was ready for business May 1, the day set for the reopening of the Oakland mills. At Augusta, the property adjoining either side of the dam has been recently purchased, and work at Augusta will be started shortly on the southernmost dam. At Wapello, on the Iowa River, a trench 3 miles in length is to be dug to give a greater and more permanent fall, and to overcome any possibilities of danger by high water. Mount Pleasant has already contracted for a supply of the power, and the promoters are meeting with encouragement in other southeastern Iowa cities. With the completion of the mammoth dam at Keokuk, 300,000 horsepower will be developed by water power in that vicinity.—*Jackson Sentinel, Maquoketa, Iowa, May 4.*

#### DRAINING THE AMERICAN BOTTOMS.

By CLARENCE J. ROOT, Section Director, United States Weather Bureau.

The American Bottoms occupy the low flat ground lying along the east bank of the Mississippi River and extending from Alton to Chester, in Illinois. This is one of the most fertile sections of the United States, but it is in constant danger of flooding. The first flood in this region, of which there is a reliable record, was that of 1724. During this and many subsequent floods the greater part of this valuable land was inundated. The greatest flood was in 1844.

The portion of the American Bottoms lying opposite St. Louis, Mo., and extending northward to the mouth of the Missouri River contains the city of East St. Louis (population 58,574), the cities of Venice, Madison, and Granite City, the terminals of all railroads entering St. Louis from the east, and large areas of valuable farm land. This district is bordered on the west by the Mississippi River, and on the north, east, and south by a ridge of bluffs extending from the river at Alton, in a wide semicircle, to a point opposite the south end of the city of St. Louis.

In June, 1903, the Mississippi River reached a height of 38 feet on the Weather Bureau gauge at St. Louis. This was 8 feet above the flood stage. Seventy per cent of this low land in Illinois was submerged, including about one-half of the city of East St. Louis. Crops were ruined, railroad traffic demoralized, and business suspended. Several lives were lost and the property loss ran into millions.

In order to protect this region from a recurrence of this condition, and to provide interior drainage, an organization, known as the "East Side Levee and Sanitary District," was formed. The district contains 96 square

miles. The protection will be obtained by constructing a system of levees and channels. The estimated cost of the entire undertaking will be \$6,500,000, all of which will be borne by the district.

Cahokia Creek rises near Litchfield, Ill., flows southwestward, and leaves the bluffs near the northeast corner of the district. It then flows through the bottoms and empties into the Mississippi River in East St. Louis. This stream, with its tributaries, drains a watershed back of the bluffs of 259 square miles. It is a menace to the district, not only as a source of backwater from the Mississippi flowing into the lower part of the stream, but on account of the large volume of water drained from the hills into the bottoms during the spring freshets.

A diversion channel is being dug from a point where the creek leaves the bluffs, about 14 miles north of East St. Louis, directly west to the Mississippi River, a distance of 4½ miles. The earth from this channel is placed to form levees on both sides, the one on the south extending from the bluffs to the river. The channel is 100 feet wide at the bottom and is 12 to 18 feet deep. The levees are 12 to 18 feet high and are set back 50 feet from the edge of the cut.

The front levee will extend from the diversion channel to a point 4 miles below East St. Louis. It will be 19 miles long and will follow, approximately, the east bank of the Mississippi River. This levee will be 8 feet wide on the top, sloping both ways, the thickness at the 1903 flood line being 43 feet. It will be 3.6 feet higher than the 1844 flood, and at least 7 feet higher than the flood of 1903. The levee will be sodded to prevent washing, and where it is exposed to the force of the current or to wave wash, it will be faced with reenforced concrete. The owners of the land lying between the front levee and the railroad embankments have agreed to fill their land, thus giving added security to the levee and tending to prevent seepage.

Another levee will be built on the south, extending from the bluffs to the south end of the front levee. This will complete a wall around the entire district, every point of which will exceed in elevation the highest water ever known.

For the purpose of interior drainage for the district, the present bed of Cahokia Creek, from the diversion channel to a point about 6 miles northeast of East St. Louis, will be cleared of drift and other obstructions, to allow the proper discharge of water from the smaller branches, county ditches, and the lateral canals that will be dug to drain the low ground. From this point a canal, 80 feet wide at the bottom, will be constructed running south to the Mississippi River near East Carondelet. It will pass to the eastward of the city of East St. Louis. Flood gates will be provided near its mouth, and during the presence of high water in the Mississippi River they will be closed. The water will then be pumped into the river.

About 75 per cent of the diversion channel is completed, together with the adjoining levees. Work on the front levee, along the river, has not been started, but it is hoped to have it completed by 1913. The interior drainage canal will be the last work undertaken.

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